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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,999	09/29/2003	I-Ming Liu	2450-0555P	7665

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EXAMINER

BUEKER, RICHARD R

ART UNIT PAPER NUMBER

1763

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/671,999

Applicant(s)

LIU ET AL

Examiner

Richard Bueker

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

Art Unit: 1763

The following grammatical errors should be corrected: In line 1 of each of the claims, "the thin film" should be changed to "a thin film". In claim 1, line 16, "mean" should be changed to "means" and in claim 1, line 18, "source" should be changed to "resource". In claim 5, line 7, "in stable state" should be changed to "in a stable state". In claim 5, line 9, "actual" should be deleted. In claim 7, line 3, "is" should be inserted before "disposed", in claim 7, line 4, "a elastic" should be "an elastic", in claim 7, line 5, "of" should be deleted, and in claim 7, line 6, "couple" should be "coupled". In claim 9, line 3, "a air" should be "an air". In claim 10, line 3, "pump" should be "a pump".

The disclosure is objected to because of the following informalities: The specification refers to chamber N of Fig. 5 as an evaporation chamber, but the function of this chamber as described in the specification is as a film forming chamber. The specification does not describe any evaporation process occurring in chamber N. Evaporation occurs in the crucible chambers 11. The phrase "evaporation chamber" at page 9, line 11; page 10, lines 1 and 24; page 11, line 1; and page 12, lines 7 and 8, must be changed to "film forming chamber". Support for this change can be found at page 11, lines 17-21. Appropriate correction is required.

Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant

intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term “the evaporation chamber” in claim 6, line 6 and in claim 9, line 4 is used by the claim to mean “a chamber in which a film is formed on a substrate” (see applicants’ specification at page 11, lines 13-21), while the accepted meaning is “a chamber in which a material is evaporated”. The phrase “the evaporation chamber” in these claims should be changed to “the film-forming chamber”.

In claim 1, the phrase “whose one end is pivoted to said mixing chamber” is non-idiomatic, vague and indefinite. It is unclear what the phrase “is pivoted to” is intended to mean. It is noted that the dictionary definition of the verb “pivot” is “to turn as on a pivot”, and therefore “is pivoted to” as used in claim 1 means “is turned to”. In this context, “to” means “toward”, and the phrase “a hollow revolving spindle whose one end is pivoted to said mixing chamber” means “a hollow revolving spindle whose one end is turned toward said mixing chamber”. Applicants’ specification does not disclose or describe a step of turning the end of the spindle toward the mixing chamber. For the purpose of applying the prior art to claim 1, it is assumed that applicants intended this phrase to mean “a hollow revolving spindle whose one end is pivoted and is coupled to said mixing chamber mechanism”.

In claims 3-7 and 9, the phrase “temperature control type hollow body” is indefinite and should be changed to “temperature controlled hollow body”. Also in claim 3, the phrase “fence gate” is non-idiomatic, vague and indefinite, and should be changed to “gate”. In claim 3, lines 7 and 8, the phrase “so as to control the input and

Art Unit: 1763

the output of the vapor” should be changed to “for controlling the flow of vapor out of the mixing chamber mechanism”.

In claim 4, line 5, the phrases “the heating pipe” and “the crucible” lack antecedent basis, as does the phrase “the opening” in claim 4, line 7. In claim 4, lines 4-6, the phrase “the concentrating chamber is coupled to the heating pipe of the crucible in any direction by the design of an arc surface” is non-idiomatic, vague and indefinite because of the phrase “in any direction” and because the claim fails to make clear what “arc surface” is referred to.

In claim 5, line 6, “the crucible” lacks antecedent basis. Also in claim 5, the phrases “for monitoring the evaporation rate according to any the evaporation material” and “by different evaporation rate” are non-idiomatic and indefinite.

In claim 6, lines 5 and 6, the phrases “the temperature control type hollow body” and “the evaporation chamber” lack proper antecedent basis.

In claim 7, the following phrases lack proper antecedent basis: “the temperature control type hollow body” (two occurrences); “the supporting plate”; “the ferrofluid sleeve”; “the center of the two ferrofluid sleeves”; and “the ferrofluid sleeves”. The scope of claim 7 (and claim 8 dependent therefrom) are too indefinite and unclear to compare to the prior art.

In claim 9, the following phrases lack antecedent basis: “the evaporation chamber” and “the temperature control type hollow body”.

Claims 11 and 12 are non-idiomatic and unclear. Also, in claims 11 and 12 the phrase "said small the distance" is non-idiomatic. Also, in claim 12 the phrase "'said diameters" lacks antecedent basis.

In claim 13, the phrase "if cleaned unnecessarily" is non-idiomatic and vague.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6 and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (WO 03/083169 and/or KR 2002038625) taken in view of Gadgil (US 6,812,157) and Yamanaka (US 2004/0134429) and in view of Chow (2004/0255857) and Foster (US 5,273,588). WO 03/083169 (pub. date 9 Oct. 2003) and KR 2002038625 (pub. date 5 May 2002) are patent family equivalents, and the English language WO 03/083169 will be used as a translation for KR 2002038625 in the following rejections. Kim discloses an apparatus for forming a thin film on an organic light emitting diode (OLED) component comprising a mixing chamber (see Figs. 3A-3D), a vacuum mechanism coupled to the mixing chamber (see Fig. 9, page 32, lines 6-9, page 34, lines 11-14 and page 37, lines 1-7 of WO 03/083169), and a hollow revolving spindle mechanism (see Fig. 3D) having a revolving arm and rotation means (transmission means) (see rotation motor 114 of Fig. 3D) for revolving the spindle. The vacuum pump 714 is coupled to the mixing chamber mechanism by way of the deposition chamber, and it evacuates both the deposition chamber and the mixing

chamber mechanism. Regarding the “fine tuning mechanism” of claim 1, this term is broad enough to read on any adjustment mechanism in Kim's apparatus. For example, the vertical moving motor 116 of Fig. 3D of Kim can be considered a “fine tuning mechanism” for fine tuning the vertical height of the spraying tube 112. The purpose of Kim's revolving spindle is to evenly distribute coating vapor on a substrate to form a uniform film on the substrate. Kim does not discuss the use of plural spraying holes in his revolving arm. Both Gadgil (see Figs. 3A and 3B and col. 5, lines 40-44) and Yamanaka (see Fig. 4 and paragraphs 158 and 159) teach that a vapor coating apparatus can achieve a desirably uniform distribution of coating vapor on a substrate to be coated by providing a revolving gas distribution arm having a plurality of spraying holes. It would have been obvious to one skilled in the art to modify the apparatus of Fig. 3D of Kim by providing it with a revolving arm of the type disclosed by Gadgil and Yamanaka because Gadgil and Yamanaka teach that their revolving arms will achieve Kim's desired goal of distributing vapor in a uniform manner. Gadgil (col. 8, lines 26-44) also teaches the desirability of distributing the spraying holes in the manner recited in claims 11 and 12, for the purpose of improving uniformity of gas distribution. Regarding the claim 1 limitation of a transmission means having a driving resource and a transmitting body, the motor 114 of Kim would inherently or at least obviously include a driving resource (electric motor) and transmitting body connecting the electric motor to the revolving spindle. Foster (see Fig. 2, elements 56, 57 and 58), however, is cited to more clearly illustrate that a rotating spindle is conventionally provided with a driving resource and transmitting body. It would have been obvious to one skilled in the art to

Art Unit: 1763

provide the spindle of Kim with a revolving transmission means of the conventional type illustrated by Foster, because it was well known that such a revolving transmission means could successfully be used to revolve a spindle as desired by Kim. Regarding claim 6, Foster's apparatus includes a hollow revolving spindle 62, which acts as a pipe to supply gas into the vacuum coating chamber of Foster. Gas enters at inlet 71 of Fig. 4, and flows into hollow spindle 62. Foster (see the seals 54, 64 and 68 of Figs. 2 and 3) teaches the use of two ferrofluid sleeves to act as gas seals for his hollow revolving spindle. It would have been obvious to one skilled in the art to use two ferrofluid seals on the hollow revolving spindle of Kim, because Foster teaches that two ferrofluid seals can be used to solve the problem faced by Kim regarding how to supply gas to a revolving gas pipe in a gas tight manner. In the above discussion, Kim (WO 03/083169) was used to teach the use of a vacuum in the coating chamber, mixing chamber and vaporizer. It is noted that Kim (2002038625) does not include this disclosure. Therefore, Chow (2004/0255857) is cited in the rejection to teach the use of vacuum pressure in an OLED deposition chamber, wherein a vacuum pump is connected to the deposition chamber and mixing chamber. It would have been obvious to couple the deposition chamber and mixing chamber of Kim (2002038625) with a vacuum pump in view of Chow. Chow also teaches the use of flow measurement sensors and flow control valves on the vapor flow line which connects the vaporizer with the mixing chamber, and it would have been obvious to provide these elements in Kim's apparatus to provide more accurate flow control.



Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (WO 03/083169 and/or KR 2002038625) taken in view of Gadgil (US 6,812,157) and Yamanaka (US 2004/0134429) and in view of Chow (2004/0255857) and Foster (US 5,273,588) as stated above, taken in further view of Takeshita (US 6,726,775) (see Figs. 32 and 33 and col. 40, line 18 to col. 42, line 65) or Bittner (5,480,488) (Figs 1-4 and col. 3, lines 9-29), who both teach that it is desirable to provide two vapor sources, with the second source acting as a reserve vapor source which can be switched with the first vapor source to allow continuous processing to continue when the first source is depleted. In view of these teachings of Takeshita and Bittner, it would have been obvious to provide the apparatus of Kim with a reserve vapor source to desirably avoid shutting down a production process when a first vapor source is depleted.

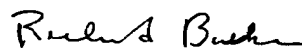
Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (WO 03/083169 and/or KR 2002038625) taken in view of Gadgil (US 6,812,157) and Yamanaka (US 2004/0134429) and in view of Chow (2004/0255857) and Foster (US 5,273,588) as stated above, taken in further view of Kinoshita (US 5,534,073) (see Figs. 49-51, element 517) who teaches the use of a funnel shaped tank gas mixer to feed mixed gas to a vapor coating apparatus. Kinoshita also teaches the use of a valve 511 to control the flow of mixed gas from the mixer. It would have been obvious to one skilled in the art to use a funnel shaped tank for the gas mixer of Kim because Kinoshita teaches that a funnel shaped mixer is a functionally equivalent mixer will successfully produce a mixed gas as required by Kim.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Richard Bueker  
Primary Examiner  
Art Unit 1763